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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,725	03/16/2007	Shuiyuan Luo	930037-2008.A.0.14.US	7155
7590 Ronald R Santucci Frommer Lawrence & Haug 745 Fifth Avenue New York, NY 10151			EXAMINER JOHNSON, JENNA LEIGH	
			ART UNIT 1798	PAPER NUMBER
			MAIL DATE 04/04/2011	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/540,725

Applicant(s)

LUO ET AL.

Examiner

Jenna-Leigh Johnson

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 February 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-63 is/are pending in the application.
- 4a) Of the above claim(s) 6-10, 16-35 and 50-63 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 11-15 and 36-49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 March 2007 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The Amendment submitted on February 1, 2011, has been entered. Claims 1, 10, 11, 36, and 43 have been amended. Therefore, the pending claims are 1 - 63. Claims 6 - 10, 16 - 35, and 50 - 63 are withdrawn from consideration as being drawn to a nonelected invention.
2. The amendment to the claim limitation drawn to the reduce air permeability property is sufficient to overcome the 35 USC 112 2nd paragraph rejection set forth in section 6 of the previous Office Action.
3. Further, the applicant's arguments (response, pages 13 - 14 and Exhibit A) are sufficient to overcome the 35 USC 112 2nd paragraph rejection set forth in section 7 of the previous Office Action.
4. The 35 USC 102 rejection based on Phillips et al. (5,925,434) since Phillips et al. fails to teach using a groove shape with a wider bottom region than the open top.

Drawings

5. The drawings are objected to because in the discussion of Figures 5(a) to 5 (h) (specification, pages 13 - 16), the disclosure refers to both the surface and the grooves as reference number 12, and refers to the grooves in places as references number 12 and reference number 14. The Figures only show the grooves as reference number 14 and reference number 12 only points to the surface of the fibers. Please correct the specification and drawings so that only one number is used to refer to the grooves, numbers are not used to refer to two different parts, and the numbers all correspond to the figures. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be

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necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

6. Claims 1- 5, 11 - 15, and 36 - 49 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
7. The phrase "the bottom of the groove-shaped cross section is wider than its open top" in claim 1 is indefinite. It is unclear if the applicant considers to be the bottom of the groove. The claims require the bottom is wider than the open top, but then dependent 3 recites that the groove is c-shaped. If the bottom of the groove is the bottom most portion of the groove, then a C-shaped groove would not have a wider bottom than the open top. Only a groove like that shown in Figures 5G and 5H with a flat bottom groove would be considered to have a wider bottom. However, the bottom of the groove is considered to be any of the groove below the surface of the fiber, then a C-shaped groove, with the widest portion located about half-way to two-thirds of the way below the fiber's surface would read on the claim. Claims 11 and 36 are similarly rejected. Claims 2 - 5, 12 - 15, and 37 - 49 are rejected due to their dependency on claim 1, 11, or 36.

For purposes of examination, bottom is considered to mean any portion below the surface of the fiber.

Claim Rejections - 35 USC § 102

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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9. Claims 1 - 5, 11 - 15, 36 - 43, 48, and 49 are rejected under 35 U.S.C. 102(b) as being anticipated by Dugan et al. (6,093,491).

Dugan teaches a fabric comprising fibers having a semi-circular shape channels (c-shaped) or grooves (Figure 2, Figure 9 column 3, lines 1 - 8). The c-shaped grooves are considered to have a wider bottom region than the open top. It is noted that a fabric made from the fibers of the present invention are considered to be uncoated because the configuration shown in Figure 2 is produced by co-extruding the polymer coating and the main portion of the fiber in a single step (column 5, lines 29 - 34). Thus, the fiber is a bicomponent fiber and not a coated fiber. Further, the embodiment shown in Figure 9 is a second bicomponent configuration, wherein the grooves are only made from the hydrophilic component of the fiber and have no perceived material or coating lining the channels (column 5, lines 42 - 50). The moisture wicking fibers of Dugan can be used to produce any fabrics.

With regards to the preamble recitation that the fabric is a papermaking fabric for use in the production of paper or nonwovens, it is noted that “where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention, the preamble is not a claim limitation”. *Kropa v. Robie*, 187 F.2d at 152, 88 USPQ2d at 480-81. Further, it has been held that a recitation with respect to the manner in which a claimed product is intended to be employed does not differentiate the claimed product from a prior art product satisfying the claimed structural limitation. *Ex parte Masham*, 2 USPQ2d 1647 (1987). Thus, the manner in which the fabric is used does not distinguish the claimed invention for the fabric of Dugan.

With regards to the reduced air permeability, the fabric of Dugan is considered to inherently possess a reduced air permeability, since the applicant has shown that adding grooves to fibers in a woven fabric would reduce the air permeability as compared to similar fabrics made from round fibers. Further, the fabric made from the grooved fibers would have a reduced air permeability as compared to open mesh or net fabrics. Thus, claims 1 - 3 are anticipated.

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With regards to claim 4, the groove shape shown by Dugan is considered to inherently possess an open angle less than 180° since it has a very similar shape to the groove shape demonstrated by the applicant.

With regards to the improved adhesion to coating properties recited in claim 11, the fibers of Dugan are presumed to inherently possess improved adhesion to coating as compared to a round fiber, since the grooved structure, not only has an increase in surface area as compared to a round fiber of similar diameter, but the grooves also partially close at the surface, which would trap the harden coating within the grooves, i.e., a mechanical interlocking between the yarn and coating. Therefore, claims 11 - 14 are anticipated.

Further, the groove structure of Dugan is considered to inherently possess improved air handling properties since the grooves would allow air to travel through the channels of the fibers and away from the surface of the fabric, as compared to a fabric made from round fibers. Also, the grooves would inherently increase the void volume of the fabric as compared to a fabric made from round fibers, without changing the fabric's caliper because the grooves increase the voids within the fibers and do not change the overall diameter of the fibers. Thus, claims 36 - 39, and 43 are anticipated. Additionally, since the grooves of Dugan are similar in shape to the C shaped grooves of the invention, the fabric is considered to inherently possess greater stability, improved sheet contact, reduced dusting, and moisture venting recited in claims 40 and 41.

Dugan teaches the fibers can be made from various polymers including polyamides, polypropylene, polyethylene, and polyesters (column 2, lines 49 - 65). Thus, claim 48 is anticipated.

With regards to claims 5, 15, and 42, it has been held that a recitation with respect to the manner in which a claimed product is intended to be employed does not differentiate the claimed product from a prior art product satisfying the claimed structural limitation. *Ex parte Masham*, 2 USPQ2d 1647 (1987). Thus, the manner in which a fabric is used is not sufficient to distinguish the claimed product from the prior art.

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With regards to claim 49, the method of fibers are extruded (column 5, lines 30 - 35).

10. Claims 1 - 5, 11 - 15, 36 - 43, 45, 48, and 49 are rejected under 35 U.S.C. 102(c) as being anticipated by Eagles (2004/0127127).

Eagles discloses a fabric comprising a plurality of functional monofilaments shaped to provide an anchoring of a coating and improved resistance to peeling away of the coating (abstract). The monofilament includes a cavity formed in the surface of the monofilament which is wider at the bottom than at the open top (Figure 3A, paragraph 32). As shown in the figures the fibers are rectangular in shape and have grooves on one surface, producing a top surface profile different from the bottom surface profile. Further, the monofilament can include a plurality of cavities and the cavities can be other shapes (paragraph 32). Examples of shapes taught by Eagles include C-shape cavities (paragraph 28). The finished fabric can be used to produce industrial fabrics used in papermaking processes (paragraph 2). Thus, claims 11 - 15 are anticipated.

With regards to claim 1, the flattened, rectangular shaped fibers, shown in Figure 3A, would inherently produce a finished fabric having reduced air permeability to a fabric made from rounded fibers since the rectangular fibers can pack together more tightly than round fibers. Thus, claims 1 - 3 and 5 are rejected.

With regards to claim 4, the groove shape shown by Eagles is considered to inherently possess an open angle less than 180° since it has a semi-circular C-shape groove which is similar to the groove shape demonstrated by the applicant.

Further, with regards to the improved air handling properties, the grooves in the fibers would create extra void space in the fabric which would create channels for air to flow through. Thus, claims 36 - 39, 42, 43, and 45 are anticipated. Further, the grooved rectangular fibers would allow moisture to vent, since the channels would create void space in the fabric that moisture can travel through. Thus, claim 41 is anticipated. Finally, the fabric of Eagles is considered to inherently possess a thinner caliper, reduced permeability, greater stability, improved sheet contact, and reduced dusting, since it is using similar

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shaped fibers to produce the finished fabric, as what the applicant teaches produces the improved properties. Therefore, claim 40 is anticipated.

With regards to claim 48, Eagles discloses using polyester or polyamide fibers (paragraph 27).

With regards to claim 49, Eagles discloses that the fibers can be produced by extrusion (paragraph 29).

Claim Rejections - 35 USC § 103

11. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

12. Claims 1 - 5, 11 - 15, and 36 - 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips et al. (5,925,434) in view of Eagles.

Phillips discloses a woven fabric comprising tape yarns (abstract). The tape yarns include a groove or a channel, shown as semi-circular or C-shaped (Figures 3A - 3C). The serrations may be on one or both sides of the tape yarn (column 7, lines 40 - 50). Further, the serrations can be in the same pattern on both surfaces (Figure 3B) or the placement can be staggered (column 8, lines 30 - 35). Finally, Phillips teaches that the yarns polypropylene, polyesters, and nylons (column 7, lines 30 - 37).

It is noted that while Phillips et al. discloses that the woven fabric can include a film coating, the invention of Phillips et al., includes an uncoated woven fabric with the serrated yarns as an intermediate product, which would meet the applicant's claim limitations.

With regards to the reduced air permeability, the fabric of Phillips et al. is considered to inherently possess a reduced air permeability, since the applicant has shown that adding grooves to fibers in a woven fabric would reduce the air permeability as compared to similar fabrics made from round fibers. Also, the flat tape structure would help to reduce air permeability as compared to round fibers. Further, the fabric made from the grooved fibers would have a reduced air permeability as compared to open mesh or net fabrics.

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With regards to the limitation that the fabric is an engineered fabric for use in the production of paper, it has been held that a recitation with respect to the manner in which a claimed product is intended to be employed does not differentiate the claimed product from a prior art product satisfying the claimed structural limitation. *Ex parte Masham*, 2 USPQ2d 1647 (1987). Thus, the manner in which a fabric is used is not sufficient to distinguish the claimed product from the prior art.

While Phillips et al. discloses various shapes of grooves with flat bottoms can be used in the invention (column 8, lines 12 - 51), the groove shapes taught by Phillips et al. fail to teach a groove shape wherein the bottom of the groove is wider than the open top of the groove. *Eagles* is drawn to grooved fibers and fabrics made therefrom. *Eagles* teaches that various shaped grooves, including grooves with a flat bottom which is wider than the opening at the top of the groove (Figure 3A) can be used to produce grooved tape yarns. Thus, it would have been obvious to one having ordinary skill in the art to choose a different groove shape with a wider bottom than top, as suggested by *Eagles*, in the groove filaments of Phillips et al., since Phillips et al. teaches various groove shapes can be used to create the grooved filament. Further, it would have been an obvious matter of design choice to choose a groove with a wider base than the open top, since such a modification would have involved a mere change in the shape of a component. A change of shape is generally recognized as being within the ordinary level of skill in the art. *In re Dailey*, 357 F.2nd 669, 149 USPQ 1966. Thus, claims 1 - 3 are rejected.

With regards to claim 4, the groove shape with a wider base than open top is considered to inherently possess an open angle less than 180%.

With regards to the improved adhesion to coating properties recited in claim 11, the fibers of Phillips et al. are presumed to inherently possess improved adhesion to coating as compared to a round fiber, since the grooved structure has an increase in surface area as compared to a round fiber of similar diameter, which would inherently improve the adhesion properties of the fabric, as compared to a round fiber fabric, and help to create a mechanical interlocking between the yarn and coating. Therefore, claims 11 - 14 are rejected.

Further, the groove structure of Phillips et al. is considered to inherently possess improved air handling properties since the grooves would allow air to travel through the channels of the fibers and away from the surface of the fabric, as compared to a fabric made from round fibers. Also, the grooves would inherently increase the void volume of the fabric as compared to a fabric made from round fibers, without changing the fabric's caliper because the grooves increase the voids within the fibers and do not change the overall diameter of the fibers. Thus, claims 36 - 39, and 43 - 48 are rejected. Additionally, since the grooves of Phillips et al are similar to the U or C shaped grooves of the applicant's invention, the fabric is considered to inherently possess greater stability, improved sheet contact, reduced dusting, and moisture venting recited in claims 40 and 41.

Finally, the yarn can be produced by extrusion (column 7, lines 58 - 61). Thus, claim 49 is rejected.

13. Claims 44, 46, and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eagles in view of Phillips et al.

The features of Eagles and Phillips et al. have been set forth above. While Eagles discloses that the monofilaments can have a plurality of grooves, Eagles fails to teach that the grooves can be on both surfaces, or that the grooves would be aligned or staggered on the different surfaces. Phillips et al. is drawn to grooved tape yarn. Phillips et al. teaches that the grooves can be on both surfaces of the tape yarn and that the grooves on the top surface can be aligned with or staggered from the grooves on the bottom surface (column 7, lines 40 - 50 and column 8, lines 25 - 40). Thus, it would have been obvious to one having ordinary skill in the art to one of ordinary skill in the art that the plurality of grooves suggested by Eagles could have been added to both surfaces and in staggered or aligned configurations, as taught by Phillips et al. to create a grooved rectangular fiber. Further, it would have been an obvious matter of design choice to add grooves to both surfaces in aligned or staggered configurations, since such a modification would have involved a mere change in the shape of a component. A change of shape is

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generally recognized as being within the ordinary level of skill in the art. In re Dailey, 357 F.2nd 669, 149 USPQ 1966. Thus, claims 44, 46, and 47 are rejected.

Response to Arguments

14. Applicant's arguments filed February 1, 2011 have been fully considered but they are not persuasive. The applicant argues that Dugan fails to teach an industrial fabric for use in the production of paper or nonwovens (response, page 14). As set forth above, the limitation that the fabric is an engineered fabric is a preamble limitation that fails to add any further structure to the claim. Further, the claim is drawn to the fabric itself and is not claim a papermaking process or a method of using the fabric. It has been held that a recitation with respect to the manner in which a claimed product is intended to be employed does not differentiate the claimed product from a prior art product satisfying the claimed structural limitation. Ex parte Masham, 2 USPQ2d 1647 (1987). Thus, the intended use of the fabric does not add any structural limitations to the claimed fabric.

Further, the applicant argues that Dugan requires a coating and cannot be used in the coated state (response, pages 14 - 15). However, as set forth above the fiber can be produced by coextruding the fiber with a hydrophilic material. Therefore, the fiber is never treated with a coating process and remains uncoated. In fact the applicant teaches that the grooved fiber can be a bicomponent fiber. Thus, the coextruded fiber is considered to be a bicomponent fiber and is not coated, but will function as desired in Dugan.

Finally, the applicant argues that the wicking properties and air permeability properties are not related (response, page 15). However, the Examiner argued that the claimed air permeability would be inherent due to the groove structure itself and not due to an wicking ability. Thus, it is unclear how this argument is related to the facts of the pending rejection. Therefore, the rejection is maintained.

15. The applicant argues that Eagles fails to teach uncoated functional monofilaments without actually detailing why the applicant believes this to be so (response, page 16). However, Eagles discloses that the grooved filaments can be made without a coating and the uncoated filaments can later be coated

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(Paragraph 31). Thus, the invention includes an intermediate product which is a woven fabric made from uncoated grooved filaments. This meets the claim limitations. In fact, the claim does not require that the fabric is use in the paper producing machine without a coating just that it is without a coating prior to being used in a paper producing system. Thus, the rejection is maintained.

Conclusion

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jenna-Leigh Johnson whose telephone number is (571) 272-1472. The examiner can normally be reached on Monday - Wednesday (8:30 - 4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Angela Ortiz can be reached on (571) 272-1206. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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jlj
March 30, 2011

/Jenna-Leigh Johnson/
Primary Examiner, Art Unit 1786